

Facilitation by *Azorella selago* affects *Agrostis magellanica* population structure more strongly than abiotic conditions

le Roux PC

Department of Plant Science, University of Pretoria, Pretoria, South Africa

peter.c.leroux@gmail.com

Environmental conditions and plant size can both alter the outcome of interspecific plant-plant interactions, with seedlings generally being facilitated more strongly than larger individuals in stressful habitats. However, the combined impact of plant size and environmental severity on the outcome of interactions is poorly understood. Here, I test explicitly for the first time the hypothesis that ontogenetic shifts in interactions are delayed under increasingly severe conditions by examining the interaction between the two most-widespread vascular plant species on Marion Island (the grass *Agrostis magellanica*, and the cushion plant *Azorella selago*) along two severity gradients. The impact of *A. selago* on *A. magellanica* abundance, but not reproductive effort, was related to *A. magellanica* size, with a trend for delayed shifts towards more negative interactions under greater environmental severity. Intermediate-sized individuals were most strongly facilitated, leading to differences in the size-class distribution of *A. magellanica* on the soil and on *A. selago*. The *A. magellanica* size-class distribution was more strongly affected by *A. selago* than by environmental severity, demonstrating that the plant-plant interaction impacts *A. magellanica* population structure more strongly than habitat conditions. As ontogenetic shifts in plant-plant interactions cannot be assumed to be constant across severity gradients and may impact species population structure, studies examining the outcome of interactions need to consider the potential for size- or age-related variation in competition and facilitation.